

IN THE CLAIMS

Please amend claims 1, 5, 8, 13, and 15 as follows.

- C1
1. (Thrice Amended) A method of forming diamond crystals or a diamond film comprising disposing a substrate in a reaction chamber; introducing, in the absence of a gas stream, a liquid precursor substantially free of water and methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one into an inlet of the reaction chamber; vaporizing the liquid precursor; and subjecting the vaporized precursor, in the absence of a carrier gas, to a plasma under conditions effective to disassociate the vaporized precursor and promote diamond growth on the substrate.

- C2
5. (Twice Amended) The method according to claim 1, wherein the carbon and oxygen containing compound is selected from ethanol, isopropanol, acetone, and combinations thereof.

- C3
8. (Twice Amended) The method according to claim 1, wherein the carbon and oxygen containing compound includes a dopant element or moiety.

- C4
13. (Thrice Amended) A plasma enhanced chemical vapor deposition of diamond crystals and diamond films on surfaces of a substrate, comprising: providing an apparatus including an inlet, a disassociation zone, a deposition zone and an outlet; introducing, in the absence of a gas stream, a liquid precursor substantially free of water and comprising methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one, into the inlet under conditions effective to vaporize the liquid precursor, flow the vaporized precursor through the disassociation zone, and through the outlet;
- Sub E2

disassociating and reacting the vaporized precursor as vaporized precursor flows or diffuses through the disassociation zone to produce OH, H, O, and carbon containing radicals; and

producing diamond crystals or diamond films on the surface of the substrate in the absence of a carrier gas.

- C5 15. (Once amended) The process according to claim 13, wherein the introducing step comprises:

introducing the liquid precursor with methanol in an amount between about 0.5 wt. % and 99.5 wt. %.

Please add the following new claims.

19. (Newly added) The method of claim 1, wherein the carrier gas is hydrogen (H₂).

C6

20. (Newly added) A method of forming diamond crystals or a diamond film comprising:
disposing a substrate in a reaction chamber;
introducing a liquid precursor containing methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one into an inlet of the reaction chamber;
vaporizing the liquid precursor;
subjecting the vaporized precursor to a plasma under conditions effective to disassociate the vaporized precursor; and
promoting diamond growth on the substrate at a rate between about 1 micrometer and 2.7 micrometers per hour.

Sub 3

21. (Newly added) A method of forming diamond crystals or a diamond film comprising:
disposing a substrate in a reaction chamber;
introducing a liquid precursor containing methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one into an inlet of the reaction chamber;
vaporizing the liquid precursor;
subjecting the vaporized precursor to a plasma under conditions effective to disassociate the vaporized precursor; and
promoting diamond growth on the substrate, in the absence of a carrier gas.

22. (Newly added) The method of claim 21, wherein promoting diamond growth includes:
promoting diamond growth, in the absence of a carrier gas, at a rate between about 1 micrometer and 2.7 micrometers per hour.

23. (Newly added) The method of claim 22, wherein the carrier gas is hydrogen (H₂).

24. (Newly added) The method of claim 21, wherein the liquid precursor consists essentially of methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one.

25. (Newly added) A plasma enhanced chemical vapor deposition of diamond crystals and diamond films on surfaces of a substrate, comprising:

providing an apparatus including an inlet, a disassociation zone, a deposition zone and an outlet;

introducing a liquid precursor comprising methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one, into the inlet under conditions effective to vaporize the liquid precursor, flow the vaporized precursor through the disassociation zone, and through the outlet;

disassociating and reacting the vaporized precursor as vaporized precursor flows or diffuses through the disassociation zone to produce OH, H, O, and carbon containing radicals; and

producing diamond crystals or diamond films on the surface of the substrate in the absence of a carrier gas.

26. (Newly added) The method of claim 25, wherein promoting diamond growth includes:

promoting diamond growth, in the absence of a carrier gas, at a rate between about 1 micrometer and 2.7 micrometers per hour.

27. (Newly added) The method of claim 26, wherein the carrier gas is hydrogen (H₂).

28. (Newly added) The method of claim 25, wherein the liquid precursor consists essentially of methanol and at least one carbon and oxygen containing compound having a carbon to oxygen ratio greater than one.